U.S. Army Corps of Engineers
New York District

Harbor Inspection
September 16, 2015

Vision of a World Class Harbor Estuary

US Army Corps of Engineers
BUILDING STRONG®

Harbor Inspection Itinerary
Wednesday, September 16, 2015

0900 . . . . . *MV Hayward* departs World Financial Center Ferry Terminal, Manhattan for Jamaica Bay Inspection

Welcome . . . . . Colonel David Caldwell, Commander, USACE New York District

0945 . . . . . Group Photo of Partners New York Harbor

Harbor Operations Overview . . . . . Mr. Thomas Creamer, Chief, Operations Division, USACE New York District

Civil Works Overview . . . . . Mr. Joseph Seebode, Deputy District Engineer for Programs and Project Management, USACE New York District

Sandy Recovery Program Overview . . . . . Mr. Anthony Ciorra, Chief, Coastal Restoration and Special Projects
USACE New York USACE New York District

POINTS OF INTEREST

2 Hudson Raritan Estuary Ecosystem Restoration & Liberty State Park . . . . . Ms. Lisa Baron, Project Manager, USACE New York District

4 Harbor Deepening Project Completion . . . . . Mr. Paul Tumminello, Chief, Civil Works, USACE New York District

Water Siphon (last impediment to 50 ft. usage) . . . . . Mr. Steve Dorrler, The Port Authority of New York & New Jersey

Itinerary Cont'd

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6 South Shore Staten Island Feasibility Study . . . . . Mr. Anthony Ciorra, Chief, Coastal Restoration and Special Projects, USACE New York District

Rebuild By Design Projects . . . . . Ms. Gabriella Amabile, U.S. Department of Housing and Urban Development

7 Sea Gate-Coney Island Improvement Project . . . . . Mr. Dan Falt, Project Manager, USACE New York District

10 Plumb Beach Restoration, Groins and Breakwater

11 Gerritsen Creek Restoration

13 East Rockaway-Jamaica Bay Reformulation Study

13 Jamaica Bay Restoration (Perimeter sites and [**12**] Marsh Islands) . . . . . Ms. Lisa Baron, Project Manager, USACE New York District

14 Spring Creek North Ecosystem Restoration . . . . . Ms. Elizabeth Jordan, New York City Department of Parks and Recreation

14 Spring Creek South Coastal Restoration . . . . . Ms. Joanna Field, New York State Department of Environmental Conservation

New York Rising, Howard Beach . . . . . Ms. Claudia Filomena, New York State Governor's Office of Storm Recovery

1300 . . . . . Depart Jamaica Bay

the WATERS we SHARE

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HUDSON-RARITAN ESTUARY, New York & New Jersey

Ecosystem Restoration Feasibility Study

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DESCRIPTION

The Hudson Raritan Estuary (HRE) is within the boundaries of the Port District of New York and New Jersey, and is situated within a 25 mile radius of the Statue of Liberty National Monument. The HRE study area includes 8 Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay.

The study purpose is to identify the water resources problems, existing conditions and factors contributing to environmental degradation within the estuary in order to develop potential solutions aimed at ecosystem restoration, while building upon existing restoration efforts and management plans (e.g., Harbor Estuary Program's Comprehensive Conservation Management Plan).

The HRE Ecosystem Restoration Program will enable the U.S. Army Corps of Engineers (USACE), its non-Federal cost-sharing sponsors, and other regional stakeholders to restore and protect lost or degraded aquatic, wetland and terrestrial habitats within the HRE study area. These activities will be accomplished by implementing various site-specific ecosystem restoration projects formulated within the context of an overall strategic plan. As a first step, the USACE, with participation of the regional stakeholders, has developed a Comprehensive Restoration Plan (CRP) that serves as a master plan and blueprint for future restoration in the HRE region.

The CRP provides the framework for an estuary-wide ecological restoration program by utilizing restoration targets -Target Ecosystem Characteristics (TECs) developed by the region's stakeholders. The CRP Program goal is to develop a mosaic of habitats that provide society with renewed and increased benefits from the estuary environment. Each TEC is an important ecosystem property or feature that is of ecological and/or societal value including restoration of coastal wetlands, shellfish/oyster reefs, eelgrass beds, water bird islands, public access, maritime forest, tributary connections, shorelines and shallow habitat, fish crab and lobster habitat, reduction of contaminated sediments and improvement of enclosed and confined waters. The CRP provides a strategic plan to achieve the TEC goals, identify potential restoration opportunities and mechanisms for implementation.

AUTHORIZATION

House of Representatives Committee on Transportation and Infrastructure Resolution dated April 15, 1999, Docket Number 2596.

STATUS

The USACE Reconnaissance Phase commenced in January 2000 and a Section 905(b) WRDA 86 Analysis was approved in June 2000. The Project Management Plan (PMP) was completed in May 2001 and the Feasibility Cost Sharing Agreement (FCSA) was executed on July 12, 2001 with The Port Authority of New York and New Jersey (PANYNJ), the non-Federal sponsor.

Overall goals and restoration targets were established as a collaborative effort among the region's stakeholders through a series of stakeholder workshops in 2005 through 2007. A Draft Comprehensive Restoration Plan was released in April 2009 and has been adopted by the New York/New Jersey Harbor Estuary Program (HEP) as the path forward for restoration in the future. Intensive public outreach to build consensus for the CRP was completed in July 2011 and the CRP has been updated based on stakeholder and Harbor Estuary Program Restoration Work Group (HEP RWG) comments.

For the feasibility study, the District is evaluating opportunities that would result in construction authorization for a subset of sites outlined in the CRP, as well as a list of restoration opportunities for future feasibility study (pursuant to Civil Works Transformation SMART Planning principles). To date, up to 24 feasibility-level (FS) investigations are ongoing including: 2 sites on the Hackensack River (Meadowlark and Metromedia Marshes), Flushing Creek, Jamaica Bay Marsh Islands, 6 Jamaica Bay perimeter sites, 9 Bronx River sites, Oysters/Governors Island, 3 Lower Passaic River sites and Liberty State Park (authorized in WRDA 2007). Feasibility activities include ecological functional assessments, preparation of additional restoration alternatives, FS-level engineering designs and cost estimates, NEPA Environmental Assessments and Cost Effectiveness/Incremental Cost Analysis (CE/ICA) for each site.

In addition, other restoration opportunities outlined in the CRP will be recommended for further feasibility study investigation which would require subsequent Congressional construction authorization. The HRE Study Area includes restoration opportunities which have been studied in greater detail through the HRE-Lower Passaic River, Bronx River Basin, Jamaica Bay, Marine Park, Plumb Beach, HRE-Hackensack Meadowlands and Flushing Bay and Creek Restoration Feasibility Studies which will be included in the HRE-overall Feasibility Study and recommended in the HRE Draft Integrated Feasibility Report/Environmental Assessment planned for early 2016.

STUDY COST
Estimated Feasibility Federal Cost: $ 9,500,000
Estimated Feasibility Non-Federal Cost: $ 9,500,000
Total: $19,000,000

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CONGRESSIONAL INFORMATION

New Jersey

NJ	U.S. Sen. Robert Menendez
NJ	U.S. Sen. Corey Booker
NJ-05	Rep. Scott Garrett
NJ-06	Rep. Frank Pallone, Jr.
NJ-07	Rep. Leonard Lance
NJ-08	Rep. Albio Sires
NJ-09	Rep. William Pascrell, Jr.
NJ-10	Rep. Donald Payne, Jr.
NJ-11	Rep. Rodney Frelinghuysen
NJ-12	Rep. Bonnie Watson Coleman

New York

NY	U.S. Sen. Charles E. Schumer
NY	U.S. Sen. Kirsten Gillibrand
NY-02	Rep. Peter King
NY-03	Rep. Steve Israel
NY-04	Rep. Kathleen Rice
NY-05	Rep. Gregory Meeks
NY-06	Rep. Grace Meng
NY-07	Rep. Nydia Velazquez
NY-08	Rep. Hakeem Jeffries
NY-09	Rep. Yvette Clarke
NY-10	Rep. Jerrold Nadler
NY-11	Rep. Daniel Donovan
NY-12	Rep. Carolyn Maloney
NY-13	Rep. Charles Rangel
NY-14	Rep. Joseph Crowley
NY-15	Rep. Jose Serrano
NY-16	Rep. Eliot Engel
NY-17	Rep. Nita Lowey

As of September 2015

Hudson-Raritan Estuary
Liberty State Park, New Jersey
Ecosystem Restoration

September 2015

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

DESCRIPTION

Liberty State Park (LSP) is located in Jersey City, Hudson County, New Jersey, on the western side of Upper New York Bay. The project site is 234 acres of undeveloped semi-degraded parkland within a fenced area of LSP. LSP was built upon a former rail yard whose habitat has degraded over decades by fill, converting wetland habitat into an upland environment. Today, Liberty State Park is an extraordinary and unique public resource located in a metropolitan region of 20 million population, with five million visitors annually. The restoration of the 234 acre interior section will provide substantial benefit to all 1,121 acres by linking previously restored components of the park into one cohesive whole. The restoration project will include the creation of 46 acres of salt marsh, 26 acres of freshwater wetlands, 50 acres of grasslands, and the enhancement of 100 acres of urban hardwood and maritime forest. This restoration will significantly enhance the ecological value of the wetlands, create habitat for fish and water birds, freshwater wetlands will restore bio-diversity to park habitat, habitat will provide for treatment of runoff and enhance the habitat for listed species.

With over five million visitors per year, two educational facilities, and existing relationships with several universities, Liberty State Park provides an unparalleled forum for the study and enjoyment of public open space and should be used as a model for the integration and maintenance of diverse habitat structure in an urban context.

PROJECT AUTHORIZATION

Liberty State Park constitutes the first interim response to the Hudson-Raritan Estuary Environmental Restoration Feasibility Study (HRE-Overall). The study was authorized by a resolution of the Committee on Transportation and Infrastructure of the U.S. House of Representatives, dated 15 April 1999, Docket 2596. The Port Authority of New York and New Jersey is the non-Federal sponsor for the HRE-Overall study; the State of New Jersey will be the sponsor for LSP construction. The project was authorized in Water Resources Development Act (WRDA) 2007, Section 1001(31)

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STATUS

The Feasibility Report and Environmental Impact Statement for Liberty State Park was completed in fall 2005, and approved by HQ. Chief of Engineers report issued in Aug 2006. Authorized in WRDA 2007. Contingent upon funding, next step is Pre-Construction Engineering and Design (PED) Phase. The New Jersey Department of Environmental Protection (NJDEP) will be the non-Federal sponsor for the project and has advanced the PED phase for the freshwater wetlands through the USACE Interagency and International Services (IIS) Program. Contingent upon funding, the PED Phase would be initiated at Liberty State Park to design the project and update the cost estimates for construction.

PROJECT COST

Estimated Federal Cost (65%) $22,588,150
Estimated Non-Federal Cost (35%) $12,162,850
Total $34,751,000

CONTACT

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CONGRESSIONAL INFORMATION

NJ U.S. Sen. Robert Menendez
NJ U.S. Sen. Corey Booker
NJ-13 Rep. Albio Sires

South Shore of Staten Island, NY

Hurricane and Storm Damage Reduction Project

September 2015

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DESCRIPTION: The study area is located along the south shore of Staten Island, New York. The study area covers 13 miles of coastline on Staten Island, from Fort Wadsworth to Tottenville, extending along lower New York Bay and Raritan Bay. The area has a long history of storm damages and has experienced major storm damages from various recent storm events, including the Northeaster of December 1992, the March 1993 storm, and the October 2012 Sandy event. These storms caused flood damages, loss of structures, large scale evacuations and several deaths within several communities. The area is now increasingly vulnerable to severe damages even from moderate storms.

AUTHORIZATION: The study is authorized by a resolution of the US House of Representatives Committee on Public Works and Transportation, adopted 13 May 1993. The purpose of this study is to identify possible risk management solutions for hurricane and storm damages in the area, and to determine whether Federal participation is warranted in constructing shore protection measures. In response to the 2012 Sandy event, P.L. 113-2, The Disaster Relief Appropriations Act of 2013, will provide authorization for construction.

STATUS: A Feasibility Cost Sharing Agreement was executed in May 1999 with the New York State Department of Environmental Conservation (NYSDEC). NYSDEC has also executed cost share sub-agreements with both the New York City Department of Environmental Protection and the New York City Department of Parks and Recreation. The feasibility study was initiated in August 2000. Study delays over the last few years were due to a lack of Federal and non-Federal funding. Due to recent funding provided by the American Recovery and Reinvestment Act of 2009 and P.L. 113-2, the Disaster Relief Appropriations Act of 2013, the study is currently under finalization. The study is currently optimizing a proposed plan of improvement for the Phase 1 area (Fort Wadsworth to Oakwood Beach) which will consist of a system of buried seawalls, floodwall, levee and acquisition, preservation and excavation of natural open space storage. The study is also assessing potential alternatives for the Phase 2 area (Great Kills to Tottenville). The Draft Feasibility Report and Environmental Impact Statement were publicly released in June 2015, with design and initiation of construction to immediately follow once the Final Feasibility Report/EIS is approved.

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CONGRESSIONAL DISTRICTS: NY-11

Sea Gate-Coney Island Improvement Project, NY

September 2015

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DESCRIPTION

The project area is located on the south shore of Long Island in the Borough of Brooklyn, Kings County, New York, and consists of approximately 3 miles of beachfront. The project provides storm damage protection to the densely populated urban communities and infrastructure located along the shoreline of Coney Island. Shore protection was provided by constructing a 100-foot wide beach berm at an elevation of 13 feet above sea level. The project included the construction of an 850-foot long terminal groin on the westernmost end of the project at West 37th Street. A fillet of sand was placed in the private community of Sea Gate to protect the groin against flanking and to prevent down drift conditions from deteriorating beyond those that existed before construction of the project. The project also includes periodic nourishment of the restored beaches on 10-year cycle for a period of 50 years. The non-Federal sponsor for the project is the New York State Department of Environmental Conservation.

PROJECT AUTHORIZATION

Project Construction was authorized by the Water Resources Development Act of 1986, as modified by Section 1076 of the Intermodal Surface Transportation and Efficiency Act of 1991. Public Law 99-662 of the 1986 act called for Federal participation in beach restoration 250 feet beyond the historic shoreline at Coney Island with the construction and maintenance of the additional beach width to be cost shared between Federal and non-Federal interests. The project was further modified by the Water Resources Development Act of 2000 (Public Law 106-541) to include the construction of T-groins in the area west of the West 37th Street terminal groin.

STATUS

The initial construction of the Coney Island shoreline protection project (West 37th Street to Brighton Beach) was completed in January 1995. The total cost of the initial construction contract is cost shared at 65 percent Federal and 35% non-Fed.

Due to the rapid rate of beach erosion down drift of the West 37th Street groin in the community of Sea Gate, approximately 600 tons of stone were placed adjacent to the West 37th Street groin in April 1996 to prevent a possible flanking condition. In June 1996, approximately 35,000 cubic yards of sand was placed adjacent to this groin to provide additional protection from potential flanking. In 2001, a stone revetment was constructed in this area to protect the groin and the west end of the project area from the continued threat of flanking caused by storm induced waves. A contract to remove accumulated sand along the Gravesend Bay area in the community of Sea Gate was awarded in February 2004 to provide temporary relief to the area from wind blown sand while a long-term solution is developed.

A Reevaluation Report & Environmental Assessment was completed in January 2005, which recommended the construction of a series of T-groins to the west of the West 37th Street groin as a long-term solution to beach erosion and sand accumulation problems that have occurred in the Sea Gate area. A condition survey of the project area was completed in spring 2011.

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STATUS (Cont.)

The Sea Gate Reach project consists of constructing four stand alone T-groin structures, one rock spur off the existing West 37th Street groin, and additional stone armoring of the existing Norton Point dike. Approximately 100,000 cubic yards of beach fill will be placed along approximately 2,000 linear feet of the Atlantic Ocean shoreline within the new T-groin field. The Sea Gate portion of the project is considered to be an Authorized but Unconstructed project according to P.L 113-2 (The Disaster Relief Appropriations Act of 2013). Because of this, the Sea Gate portions of the project are funded at 100% Federal cost. Project construction is scheduled to be complete by summer of 2016.

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CONGRESSIONAL INFORMATION

New York

NY	U.S. Sen. Charles E. Schumer
NY	U.S. Sen. Kirsten Gillibrand
NY-08	Rep. Hakeem Jeffries
NY-09	Rep. Yvette Clarke

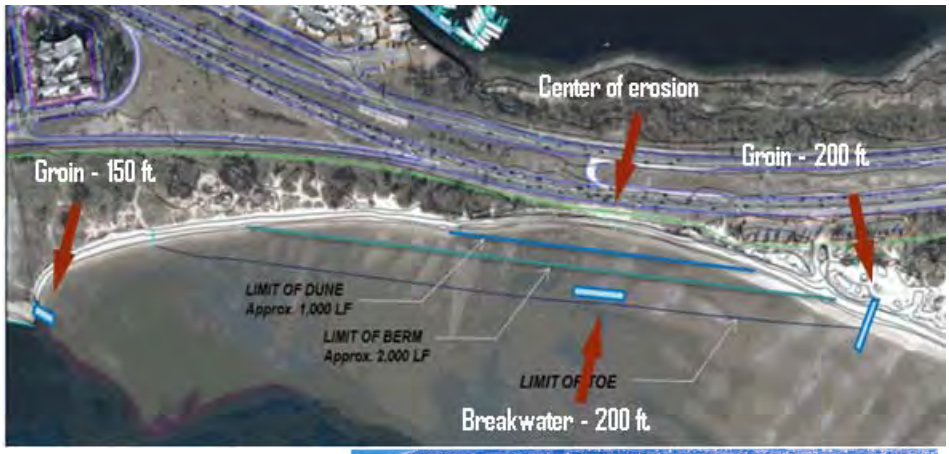
Plumb Beach

September 2015

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

DESCRIPTION

Located in the borough of Brooklyn, along the north shore of the bay just east of Knapp Street, Plumb Beach is a popular recreational site for sunbathers, wind surfers, hikers/bikers, nature watchers and others. Partly within Gateway National Recreation Area and partly under the jurisdiction of NYC Department of Parks and Recreation (NYCDPR), the beach has been subject to excessive erosion since the area was filled during construction of the Belt Parkway in the 1930s.



This erosion threatened critical infrastructure, including a major emergency route for New York City, significant buried utilities, as well as a popular bike path. Wave action from a storm event in the fall of 2009 destroyed portions of the bike path, and came within 25 feet of the Belt Parkway, forcing New York City Parks to award a contract to temporarily repair the eroded area with sandbags to prevent further losses that would threaten the parkway and utilities.

In response, the USACE developed an interagency team, including New York State Department of Environmental Conservation and Department of State, the National Park Service, New York City Department of Parks & Recreation, the New York City Department of Environmental Protection and the New York City Department of Transportation. This interagency team agreed on a comprehensive solution to afford long-term protection to this vital area and its adjacent infrastructure, while balancing the environmental and recreational impacts to Plumb Beach and the vicinity.

PROJECT AUTHORIZATION

1992 WRDA, as amended (33 U.S.C. 2326)

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STATUS

The Army Corps of Engineers, New York District, received funding to initiate a Feasibility study for this project in 2010. The Feasibility Report was completed in 2011. The Feasibility study recommended a combination of stone groins, sand placement and a breakwater to provide a long-term fix to the erosion problem. After executing a Project Partnership Agreement with the NYCDP&R, sand placement dredged from the Ambrose Channel for the Harbor Deepening Project was completed in late 2012, along with the construction of a temporary geo-tube groin immediately prior to Hurricane Sandy. Phase II construction of the stone groins and breakwater began in April 2013 and the project was completed in November 2013.

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CONGRESSIONAL INFORMATION

New York

NY	U.S. Sen. Charles E. Schumer
NY	U.S. Sen. Kirsten Gillibrand
NY-08	Rep. Hakeem Jeffries

Gerritsen Creek, Marine Park, NY
Ecosystem Restoration

September 2015

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DESCRIPTION

This ecosystem restoration project seeks to improve the aquatic and coastal grassland habitats located in the northeastern section of Marine Park, Brooklyn, NY near the junction of Gerritsen Creek and Mill Creek, immediately west of Floyd Bennett Field. The project purpose is to ameliorate the adverse impacts of past filling activities related to the construction, maintenance, and improvementof the large network of navigation channels within Jamaica Bay. The recommended plan is designed to increase the twice-daily tidal inundation across of the project site, and to convert the *Phragmites* dominated areas that lie adjacent to the existing salt marsh fringes to more healthy tidal ecosystems.

The Gerritsen Creek project site targeted for ecosystem restoration is an approximate 67-acre site that lies within the Jamaica Bay watershed in Marine Park, Brooklyn, New York. Restore approximately 48.2 acres of wetland and upland habitat, which includes approximately 17 acres of inter tidal salt marsh and approximately 23 acres of coastal/maritime grassland. This will be accomplished by excavation, sediment placement, re-contouring and native species planting. The restoration of the historic intertidal marsh will require the removal of approximately 85,000 cubic yards of fill material which will then be placed in the upland areas to create the new coastal /maritime grassland. The areas to be restored will be planted with appropriate vegetation and a revised nature trail system will be established.

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Located adjacent the Marine Park Nature Center, this project will provide a highly visible and accessible contribution to the overall restoration of greater Jamaica Bay. The project site is under the authority of the New York Department of Environmental Conservation. The Non-Federal sponsor for this project is the New York City Parks Department. The project was designed by the U.S. Army Corps of Engineers, New York District Engineering Division.

PROJECT AUTHORIZATION

Section 1135 (b) of WRDA 1996, as amended [33 U.S.C. 2309(a)]

STATUS

The Ecosystem Restoration Report (ERR) with integrated Environmental Assessment (EA) was completed in October 2003, and the Plans and Specifications phase was initiated in early Fiscal Year 2004. A Project Cooperation Agreement for construction implementation was executed with the New York City Department of Parks and Recreation, the non-Federal sponsor, on 30 September 2004. Federal funding to complete this project was allocated in 2008, and the initiation of construction began in December 2009. Final planting activities were completed by June 2011. Project was opened to the public in August 2012.

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CONGRESSIONAL INFORMATION

New York

NY	U.S. Sen. Charles E. Schumer
NY	U.S. Sen. Kirsten Gillibrand
NY-08	Rep. Hakeem Jeffries

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JAMAICA BAY MARSH ISLANDS

SEPTEMBER 2015

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

DESCRIPTION

Jamaica Bay is situated within the Boroughs of Brooklyn and Queens, New York City. Approximately 8 miles long by 4 miles wide, it covers 26 square miles, and opens into the Atlantic Ocean via the Rockaway Inlet. Jamaica Bay is recognized by the United States Fish and Wildlife (USFW) as a coastal habitat deserving preservation and restoration of habitats which contribute to sustaining and expanding the region's native living resources. Jamaica Bay is a highly productive habitat for a variety of fish and wildlife species. These species breed and use the area as a nursery for juvenile birds that reside in the area during winter and migratory birds that stop-over during fall and spring.

The Jamaica Bay Marsh Islands are at the heart of the complex urban ecosystem of Jamaica Bay that is a part of the National Park Service, U.S. Department of the Interior - Gateway National Recreation Area (GNRA), first urban National Park, established in 1972 and is a key component of the President's America's Great Outdoors initiative.

The Marsh Islands Complex is an integral part of Jamaica Bay Ecosystem and has been targeted for restoration. It is estimated that approximately 1,400 acres of tidal salt marsh have been lost from the marsh islands since 1924, with the system wide rate of loss rapidly increasing in recent years. From 1994 and 1999, an estimated 220 acres of salt marsh were lost at a rate of 47 acres per year. Left alone, the marshes were projected to vanish by 2025, destroying wildlife habitat and threatening the bay's shorelines.

To date, there is no consensus among ecological experts on the cause of the erosion of the marsh islands, which range from rising sea levels and warmer temperatures to nitrogen input from storm water run-off. Representatives from federal, state and local agencies have helped to "jumpstart" the ecological process acknowledging that these daunting challenges to restoring an urban estuary need to be overcome.

STATUS

In response to these losses, under the U.S. Army Corps of Engineers' Continuing Authorities Program (CAP), the New York City Department of Environmental Protection (NYCDEP) and New York State Department of Environmental Conservation (NYSDEC) requested assistance in implementing one or more marsh island restoration projects.

A 2006 Report titled "Jamaica Bay Marsh Islands, Jamaica Bay, NY, Integrated Ecosystem Restoration Report" recommended restoration of three marsh islands: Elders Point East, Elders Point West and Yellow Bar Hassock.

As of 2005, Elders Point was comprised of two islands, Elders East and Elders West totaling only 21 vegetated acres. Originally one island comprised of 132 acres, the loss of marsh in the center portion severed the two ends, resulting in two separate islands connected by mudflat. U.S. Army Corps of Engineer activities at Elders Point East Marsh Island in 2006-2007 involved restoring 40 acres of marsh constructed for mitigation purposes to offset environmental impacts of the New York & New Jersey Harbor Deepening Project (HDP).

In 2010, the USACE, in partnership with the Port Authority of New York and New Jersey, NYSDEC, NYCDEP, and the National Park Service (NPS) restored approximately 40 additional acres at Elders Point West as a result of the beneficial use of dredged material from the HDP. The restoration plan for Elders East and West included restoring the existing vegetated areas and the sheltered and exposed mudflats by placing dredged sand up to an elevation suitable for low marsh growth. This included hand planting more than 700,000 plants (grown from local seed stock by the National Resources Conservation Service (NRCS) on East and replanting more than 200,000 plants on West. On Elders East, smooth cordgrass or saltmarsh cordgrass (*Spartina alterniflora)* was planted throughout the low marsh zone. A mixture of salmarsh cordgrass*, saltmeadow cordgrass or salt hay (Spartina patens)*, and spike grass (*Distichis spicata)* were planted in the zones between low marsh and upland.

As part of the NY/NJ Harbor-Jamaica Bay Multi-Project Initiative, sand from the Ambrose Channel was beneficially reused from the Harbor Deepening project to create an additional 87 acres of marsh island habitat within Jamaica Bay. During February and March 2012, 375,000 cubic yards of sand was placed at Yellow Bar Hassock Marsh Island resulting in 67 acres of new marsh island and approximately 45.4 acres of wetlands (including ~ 13.3 acres of hummock relocation. 28 acres of low marsh seeding, 17,175 high marsh plants, and 21,859 high marsh transition plants). Marsh construction was completed on 2 August 2012. Replanting damaged/lost vegetation from Hurricane Sandy will take place in Spring 2014.

In September and October 2012, Ambrose Channel sand was also beneficially used to restore an additional 30 acres of marsh islands at Black Wall (155,000 cubic yards of sand, 20.5 acres) and Rulers Bar (95,000 cubic yards of sand, 9.8 acres) as part of the USACE’s Beneficial Use Program with local partners (NYCDEP, NYSDEC, and The Port Authority of New York and New Jersey).

NYCDEP and the NYSDEC with local non-profit organizations (EcoWatchers, Jamaica Bay Guardian and the American Littoral Society) completed a community based planting effort to vegetate the 30 new acres created at Black Wall and Rulers Bar with the above referenced plants in June 2013.

Repairs have been made on Yellow Bar following Hurricane Sandy including debris removal, repair of fencing and replanting of ~700,000 plants on the island (recently completed in June 2014). The marsh island restoration efforts are being monitored by the project team, in coordination with NPS, and are providing valuable data on the cause of the problems and helping identify the most effective future restoration options. This program also has significant implications for the future success of restoration activities from beneficially using sand from the Operations and Maintenance (O&M) Program.

SUMMARY OF MARSH ISLAND WETLAND ACRES RESTORED

Elders East	Approximately 43 acres
Elders West	Approximately 40 acres
Yellow Bar Hassock	Approximately 46 acres
Black Wall	Approximately 20 acres
Rulers Bar	Approximately 10 acres

AUTHORIZATION

Section 204 of the Water Resources Development Act of 1992, Public Law 102-580, as amended by
Section 207 of the Water Resources Development Act of 1996 (codified as amended at 33 U.S.C. § 2326), and as amended by Section 2037 Regional Sediment Management of the Water Resources Development Act of 2007.

PROJECT COST

Yellow Bar Hassock
Total Project Cost: $19,642,857
Federal: $12,767,857
Non-Federal: $6,875,000

Black Wall
Total 100% Non-Federal: $2,100,000

Rulers Bar
Total 100% Non-Federal $1,311,000

For information, contact: **Lisa Baron, Project Manager**
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Telephone: 917-790-8306

ATLANTIC COAST OF NEW YORK CITY, EAST ROCKAWAY INLET TO ROCKAWAY INLET AND JAMAICA BAY, NY

Coastal Storm Risk Management Feasibility Study
September 2015

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

Description

The U.S. Army Corps of Engineers, in partnership with the New York State Department of Environmental Conservation, is carrying out the Atlantic Coast of New York, East Rockaway Inlet to Rockaway Inlet and Jamaica Bay Coastal Storm Risk Management Feasibility Study which is assessing the feasibility of coastal storm risk management alternatives to be implemented within the congressionally authorized study area. This overall study area includes the entire Rockaway peninsula as well as backbay communities around Jamaica Bay.

This area has been broken into 12 planning regions that are currently being assessed.

Map showing the Atlantic Coast of New York, East Rockaway Inlet to Rockaway Inlet and Jamaica Bay Coastal Storm Risk Management Feasibility Study area

During Hurricane Sandy, both Rockaway and Jamaica Bay communities were severely impacted. The area was subjected to extreme erosion, surge and wave damage along the Atlantic Ocean shoreline, and extreme flooding in Jamaica Bay. The Atlantic Ocean surge and wave effects exceeded the island height, resulted in flow of water across the island, and contributed to the flooding along the Jamaica Bay shoreline. Hurricane Sandy illustrated the need to address the entire peninsula and back-bay area as a system, when considering risk-management measures.

Study Objectives

- Reduce Vulnerability to Storm Surge Impacts
- Improve Community Resiliency
- Enhance Natural Storm Surge Buffers if Possible
- Reduce overall coastal storm risks

Study Constraints

- Do not impact other efforts/initiatives (NY Rising, FEMA, HUD, etc)
- Do not reduce navigation, public access or egress
- Do not induce flooding in other areas
- Do not negatively affect Endangered Species

What is being looked at to reduce coastal storm risks to the Jamaica Bay communities?

- Hurricane Storm Surge Barriers
- Local Flood Gates at inlets
- Flood Walls or Levees
- Nature Based Features
- A combination of these types of measures

What's Next?

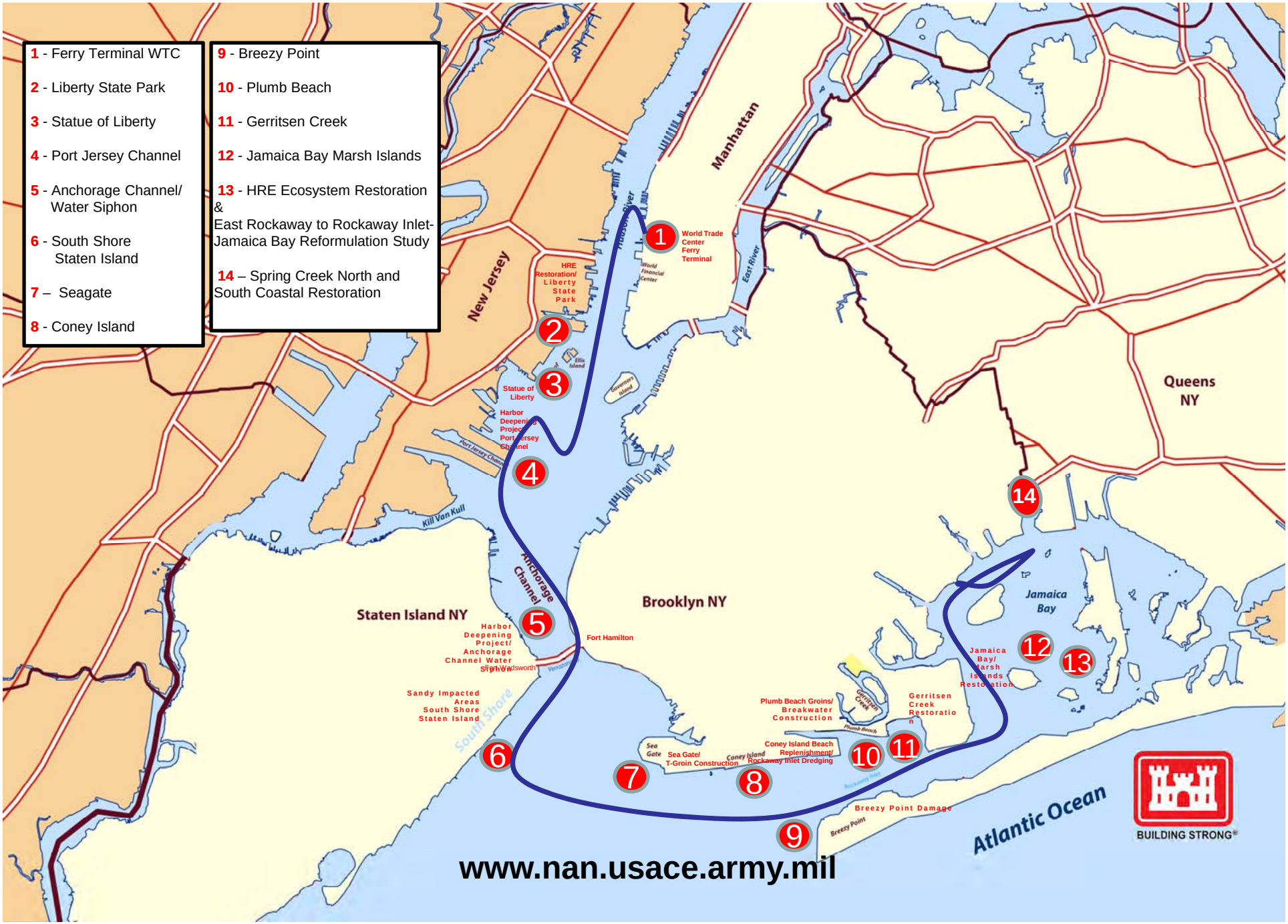
The U.S. Army Corps of Engineers is developing a Draft Reformulation Study that will identify detailed coastal storm risk management alternatives to share with the public early 2016. A preliminary range of alternatives was developed and presented to the public in 3 public meetings during 2015, and these presentations are available on the District website.

Questions? Call the New York District public affairs office at 917-790-8007 or e-mail CENAN-PA@usace.army.mil. For more information concerning the Rockaway/Jamaica Bay General Reevaluation Study please visit our website at: http://www.nan.usace.army.mil/Home.aspx

13


East Rockaway Inlet to Rockaway Inlet and Jamaica Bay General Revaluation Report
FCCE Repair and Restore work (full beach restoration)
JFK Airport
Back-Bay Area
Shorefront Area
©2010 Google

Harbor Inspection Points of Interest



NY & NJ Harbor Deepening Project Overview

Description:

• Deepens 35 miles of navigation channels to 50 - 53 ft (mean low water) to provide deep draft access to the major container terminals within the Port of NY & NJ.

• Key features of the 50 ft. project include:
  – 21 large dredging contracts, 18 complete, 2 underway
  – Mitigation restoring 143 acres of tidal wetlands
  – Offsets NOx air emissions
  – Beneficial use of dredged material (>157 acres of marsh islands, > 40 acres of sublittoral habitat, artificial reefs, etc.)
  – **Fiscal Year 2015 Federal Funding:** $22M
  – **Remaining Work**: Complete removal of accumulated shoals (some due to Sandy), Implement plans to dredge over NYC water siphons, and construct last 40 ft. contract in Arthur Kill to Phillips 66 Refinery.

Total Project Cost : $1.6 Billion

Cost Share
Approx. 54% Fed, 46% Non-Fed

Non-Federal Sponsors
Port Authority of New York & New Jersey
New Jersey Department of Transportation Office of Maritime Resources

THE PORT AUTHORITY OF NY & NJ

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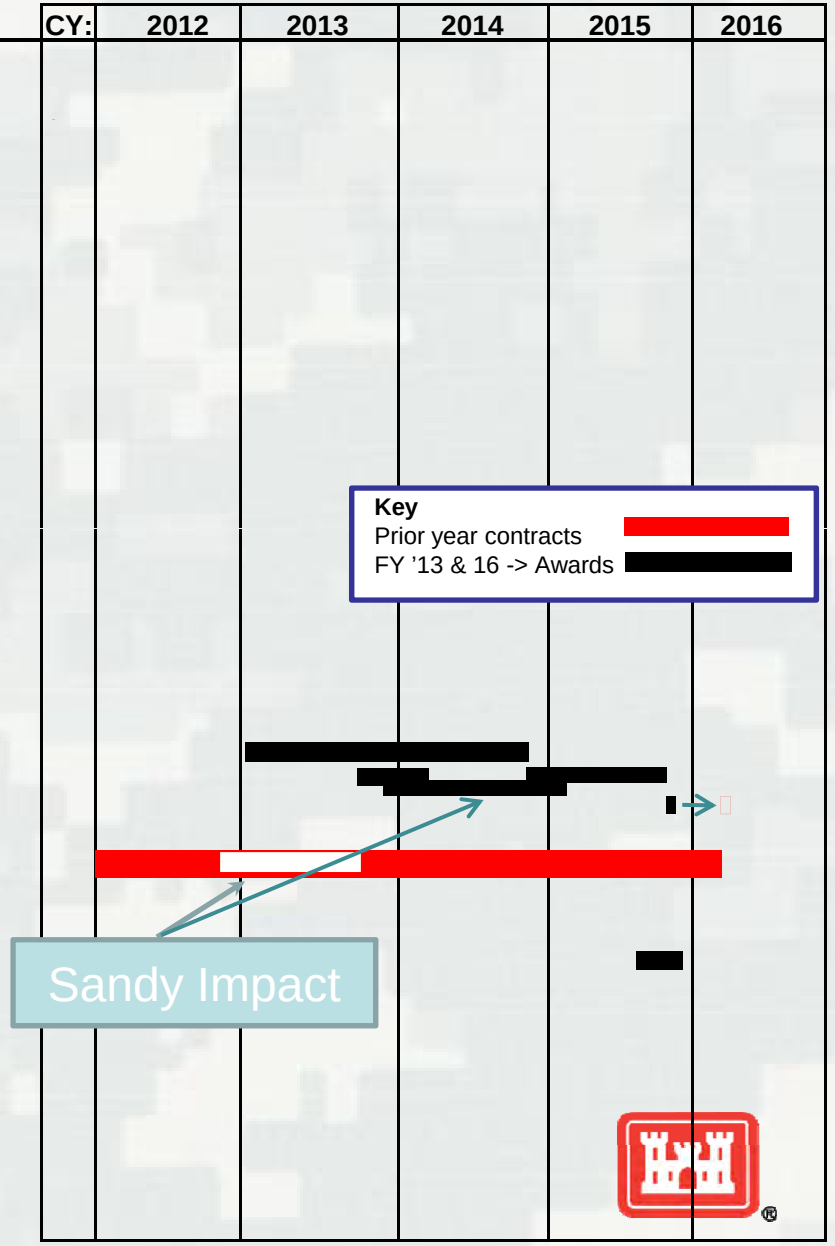
New York and New Jersey Harbor Construction Schedule

50 ft. Channel Deepening

CHANNEL/CONTRACT	STATUS
Ambrose	
Contract 1 (S-AM-1)	Completed Jun 2008
Contract 2a (S-AM-2a)	Completed May 2010
Contract 3a (S-AM-3a)	Completed Oct 2012
Contract 3b (S-AM-3b)	Completed Jan 2013
Anchorage	
Contract 1 (S-AN-1a)	Completed Oct 2008
Contract 1b (S-AN-1b & S-AM-2b)	Completed Jan 2011
Contract 2 (S-AN-2)	Completed Mar 2011
Port Jersey	
Contract 3 (PJ-3)	Completed Jul 2010
Contract 4 (PJ-4) (over PVSC Outfalls)	Completed Oct 2012
Kill Van Kull	
Contract 1 (KVK-5)	Completed Dec 2004
Contract 2 (S-KVK-2)	Completed Mar 2007
Contract 3 (S-KVK-1)	Completed Sep 2011
Newark Bay	
Contract 1 (S-NB-1)	Completed Jan 2011
Contract 2 (S-E-1)	Completed Apr 2010
Contract 3 (S-NB-2/S-AK-1)	Completed Sep 2012
Arthur Kill	
Contract 1 (S-AK-2)	Completed Mar 2013
Contract 2 (S-AK-3, incl PE, KVK)	Completed Dec 2014
Shoal Removal & Utility Corridor	FY13&16-> (3 contracts)
Water Siphon Replacement	
(PA/NYC Contract)	Awarded Aug 2010
Arthur Kill 41/40 ft. Channel Deepening	
Arthur Kill Channel Contract #4 (to Phillips 66 Refinery, Linden, NJ)	Awarded 9 Dec 14
Mitigation	
Woodbridge Creek, NJ	Completed
Elders East - Jamaica Bay, NY	Completed
Beneficial Use of Dredged Material	
Elders West, Jamaica Bay, NY	Completed Aug 2010
Yellow Bar, Jamaica Bay, NY	Completed Jul 2012
Black Wall and Rulers Bar, Jamaica Bay	Completed Nov 2012



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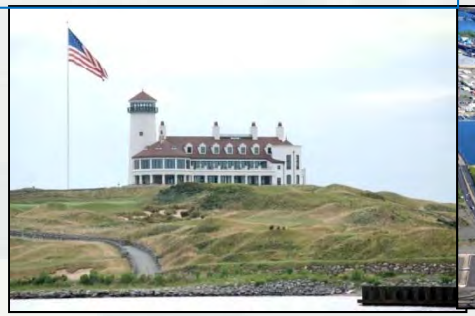
As of September 2015

Beneficial Use of Dredged Material from Harbor Deepening

Brownfield Remediation



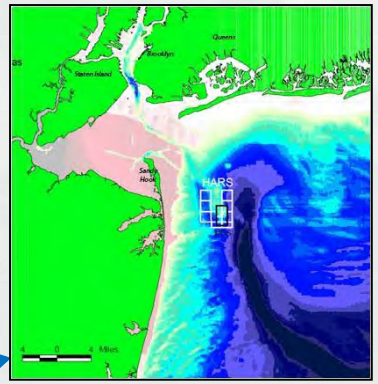
Bayonne Landfill: 4MCY
(+ many other landfillls &
Brownfields remediated)

Lincoln Park: 339,000 CY

Beach Nourishment/Shoreline Stabilization

Plumb Beach: 155,000 CY

Remediation



Capping HARS (+O&M): ~56 MCY

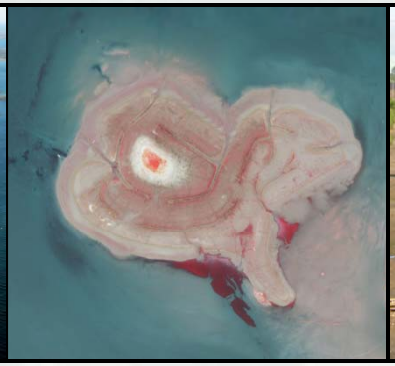
Harbor Deepening Project:
~50 M CY

Fish Reefs: ~11 MCY rock

Capping NBCDF: 235,000 CY

Ecosystem Restoration: Jamaica Bay Marsh Islands

Elders East: 249,000 CY
43 acres



Elders West: 302,000 CY
40 acres

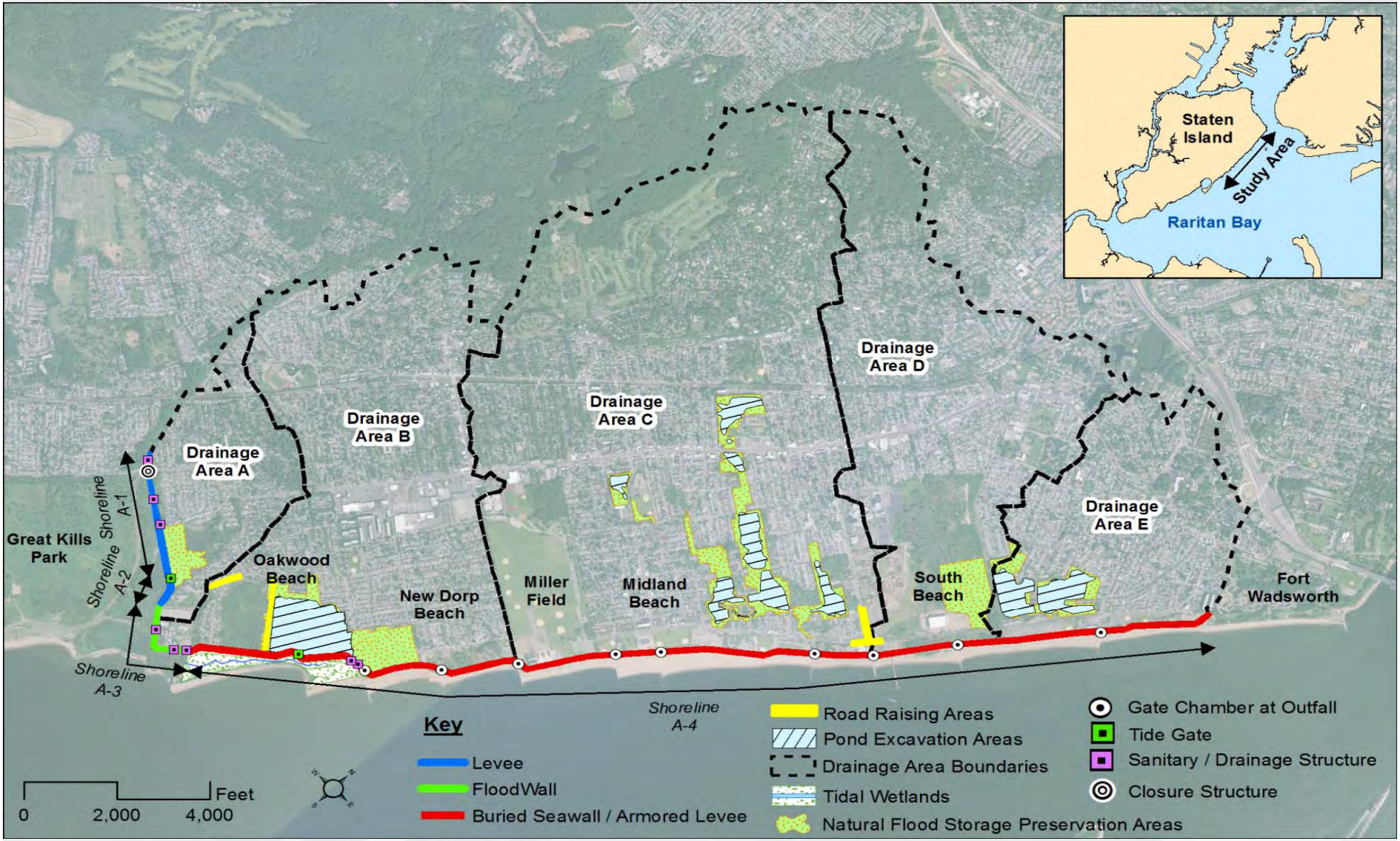
Yellow Bar: 375,000 CY
47 acres

Black Wall: 155,000 CY
20 acres

Rulers Bar: 92,000 CY
10 acres

SOUTH SHORE OF STATEN ISLAND, NY

Proposed Plan Layout



US Army Corps of Engineers
New York District

SOUTH SHORE OF STATEN ISLAND, NY

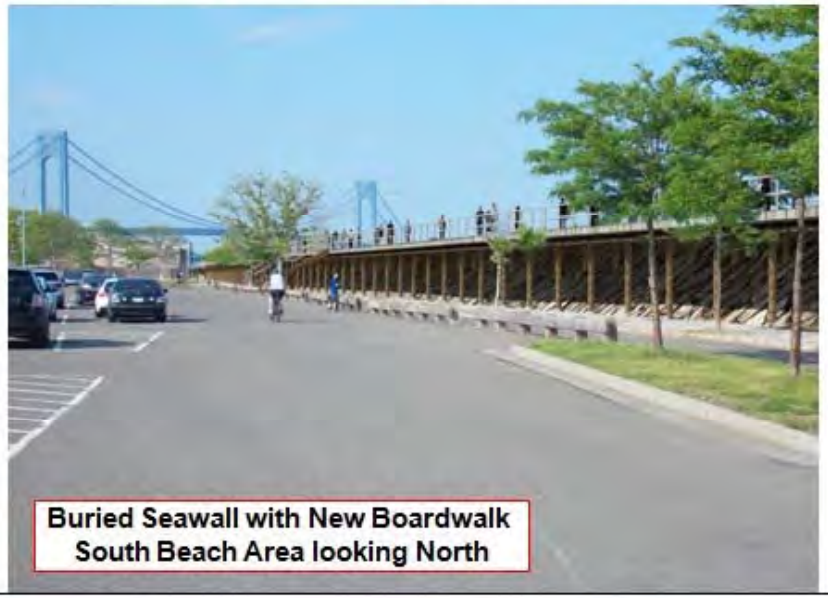
Project Renderings

NEW YORK STATE OF OPPORTUNITY Department of Environmental Conservation

Existing Boardwalk
South Beach Area looking South

Buried Seawall with New Boardwalk
South Beach Area looking South

Existing Boardwalk
South Beach Area looking North



Buried Seawall with New Boardwalk
South Beach Area looking North

US Army Corps of Engineers
New York District

SOUTH SHORE OF STATEN ISLAND, NY

Project Renderings

NEW YORK STATE OF OPPORTUNITY Department of Environmental Conservation

Existing Promenade
Midland Beach Area looking North

Buried Seawall with new Boardwalk
Midland Beach Area looking North

Jamaica Bay Planning Region Efforts

Plumb Beach and Belt Parkway, Brooklyn New York City

Plumb Beach
2012 / 2013

127,000 cubic yards of sand
Breakwater and 2 Groins
$ 5M

Local Sponsor: New York City Department of Parks and Recreation

Plumb Beach Progress
2012 / 2013

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Gerritsen Creek, Marine Park Brooklyn, NYC
Aquatic Ecosystem Restoration

Gerritsen Creek, Brooklyn, NYC
Historical Map

Gerritsen Creek: Fill Removal and Recontouring

Gerritsen Creek: Vegetating the Site – New Plants

Gerritsen Creek Progress

2010

Early 2011

Late 2011

Coney Island, Brooklyn, NYC

- Noteworthy
  - Sea Gate T-Groins Purpose is to protect the authorized project (beach fill)

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Construction of first hydraulically pumped beachfill at Coney Island NY, 1922

Note the elevation of the boardwalk piers

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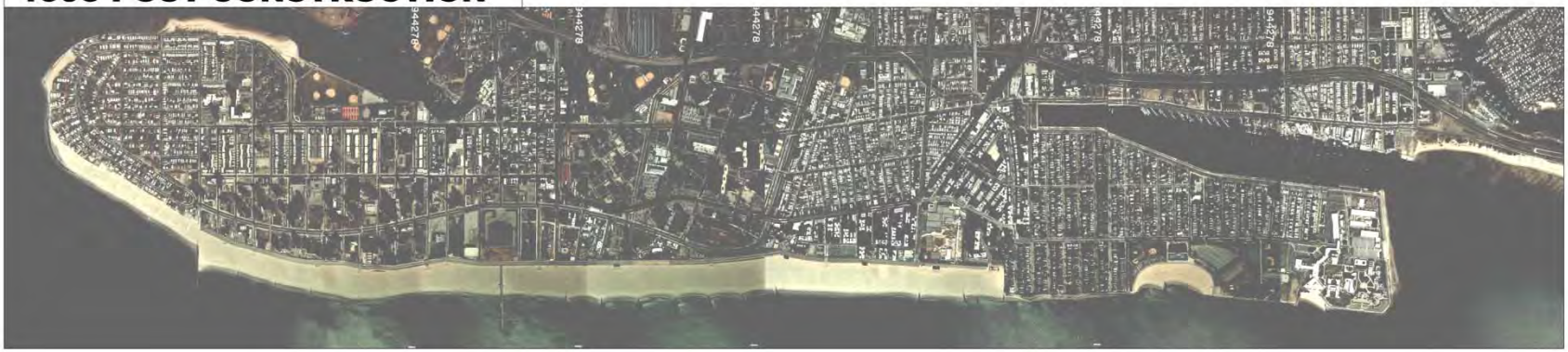
1993 PRE-CONSTRUCTION

1995 POST-CONSTRUCTION

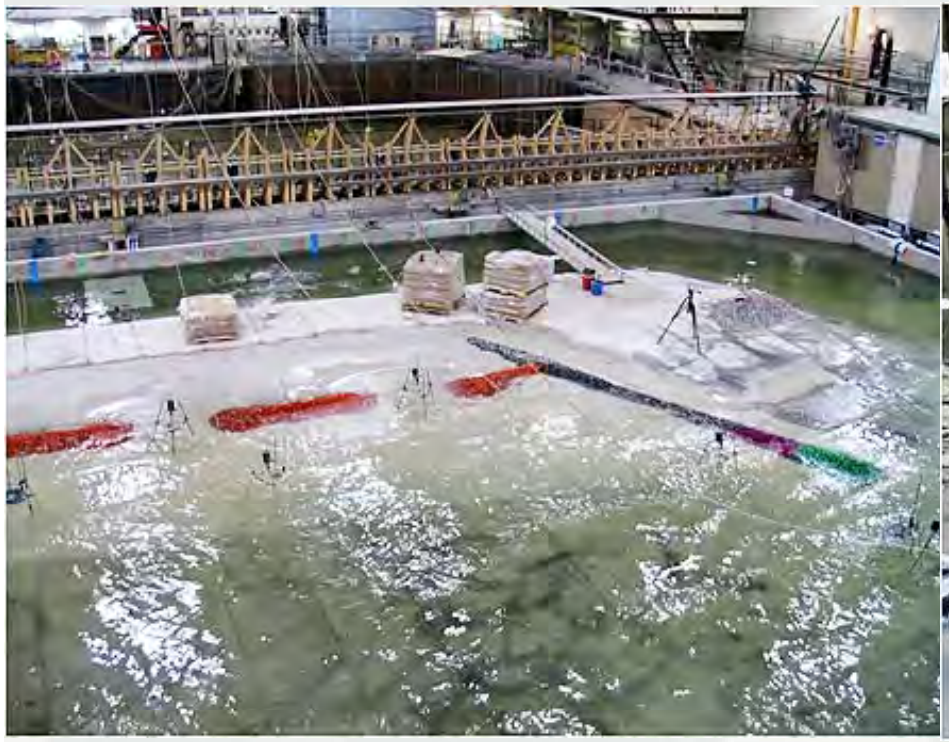


2005 10-YEARS POST-CONSTRUCTION

Coney Island – Sea Gate T-Groins
Conceptual Drawing

BUILDING STRONG®

Physical Modeling of the T-Groins in 2005



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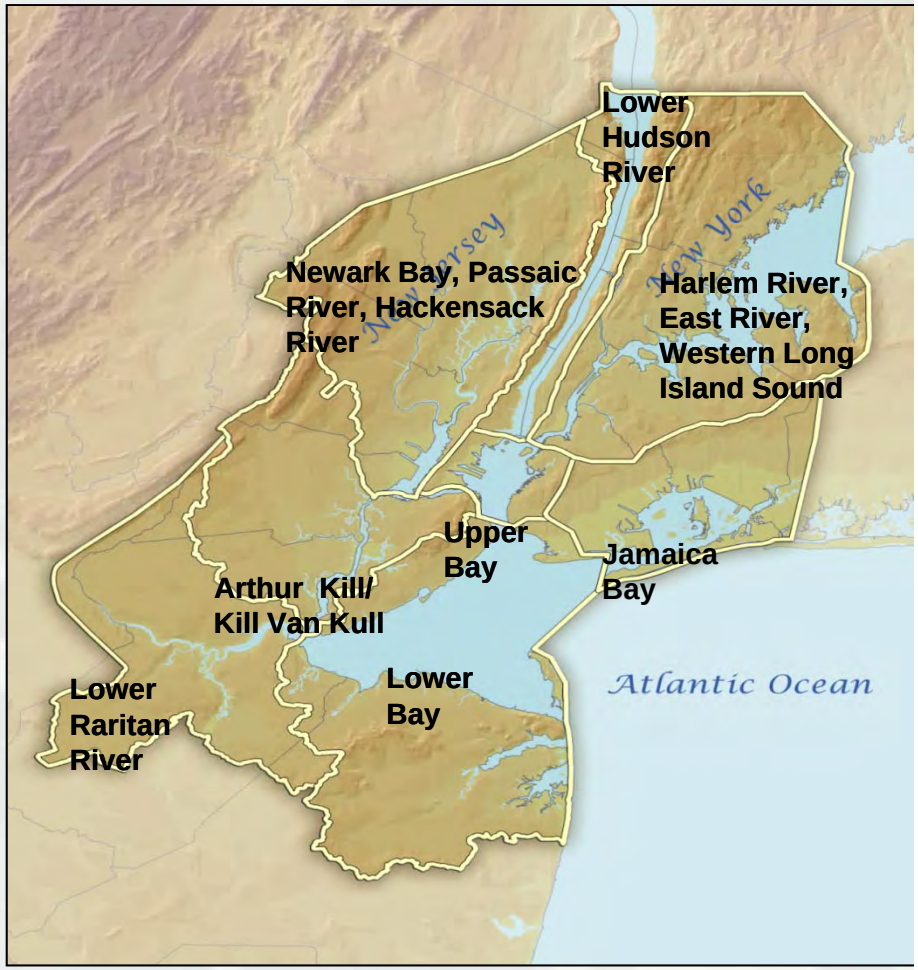
Rendering of Coney Island T-Groin Project After Initial Construction

Hudson-Raritan Estuary (HRE) Feasibility Study

- Broad study authority (1999) to evaluate ecosystem restoration within the entire Port of NY/NJ (8 Planning Regions)

- Restores wetland habitat and function, improves water quality, and quality of life for the Metropolitan Regions' 22 Million citizens
- Sponsor: Port Authority NY/NJ
- Cost: $19,000,000
- Comprehensive Restoration Plan (2009/Updated 2015)
- Draft Feasibility Study Report (2016)



Hudson Raritan Estuary (HRE)
Comprehensive Restoration Plan

- **SHARED** Vision, Master Plan and Blueprint for a future restored estuary
- Collaboration among 129 organizations
- Adopted by the NY/NJ Harbor Estuary Program (HEP)
- Establishes Priority Restoration Goals or Targets: Target Ecosystem Characteristics

✓ Aligns regional restoration activities

✓ Identifies > 280 Restoration Opportunities

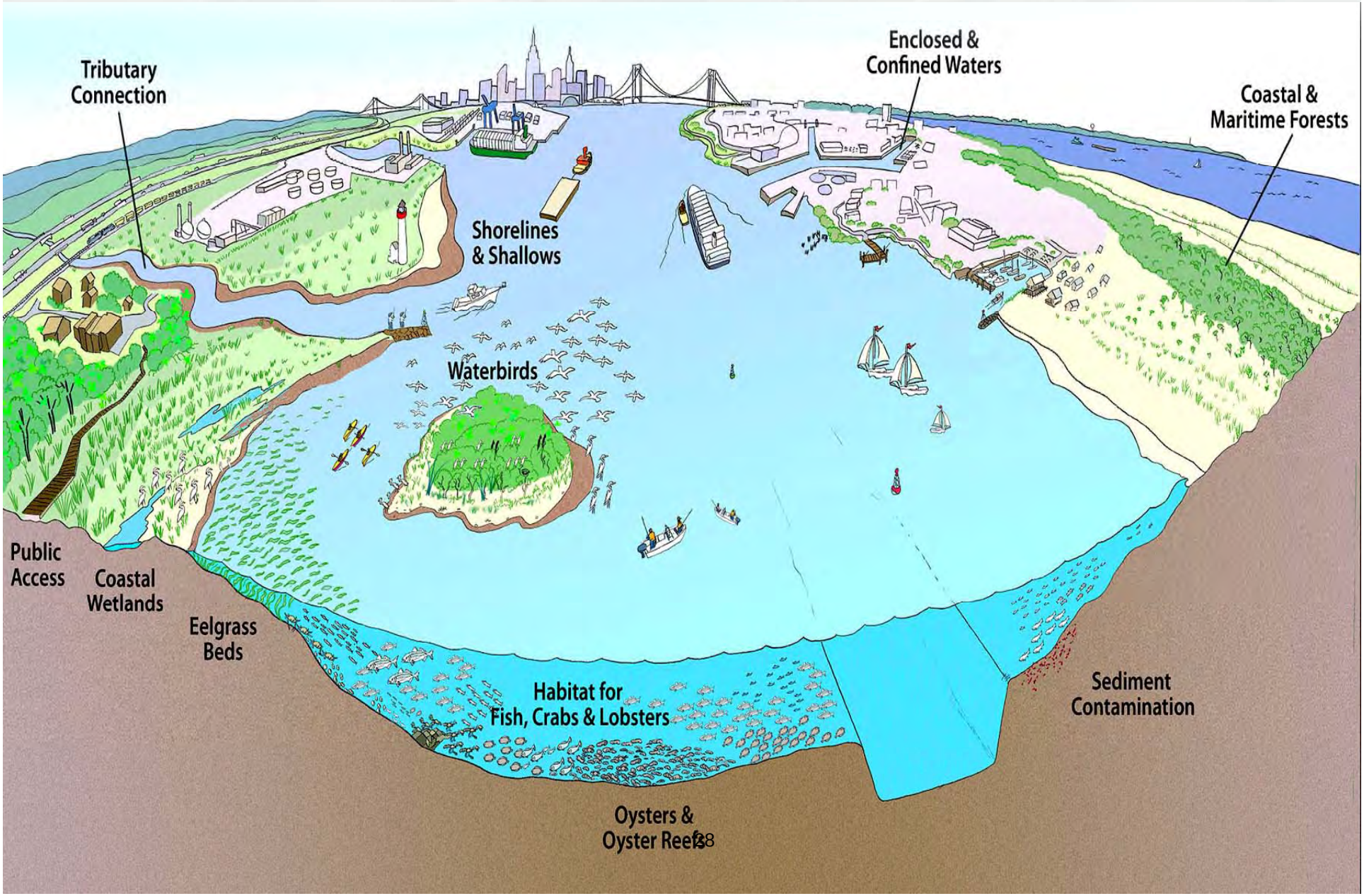
✓ Not just the USACE's Plan

✓ Model for large-scale ecosystem restoration programs

✓Serves as living document and is actively managed to track progress (HEP Restoration Work Group)

Target Ecosystem Characteristics

[What] [Where] [How Much] [By When]



Hudson Raritan Estuary (HRE) Restoration Feasibility Study

- Study Authorization will remain OPEN
- Currently 25 sites plan to be recommended for Near-Term Construction (FS-Level Designs)
- 255 Sites for possible Future “Spin-Off” Feasibility Studies (may include multiple sites) for future budgeting process (3x3x3 compliant)
  - ❖ FY17 Request: HRE Oakwood Beach/Great Kills Site, Staten Is., NY

Study Report Includes recommendations from Lower Passaic River, Bronx River, Flushing Creek, Jamaica Bay and Hackensack River Feasibility Studies which are within the HRE Planning Regions

Sites to be Recommended for Construction

Lower Passaic River: 3 Sites

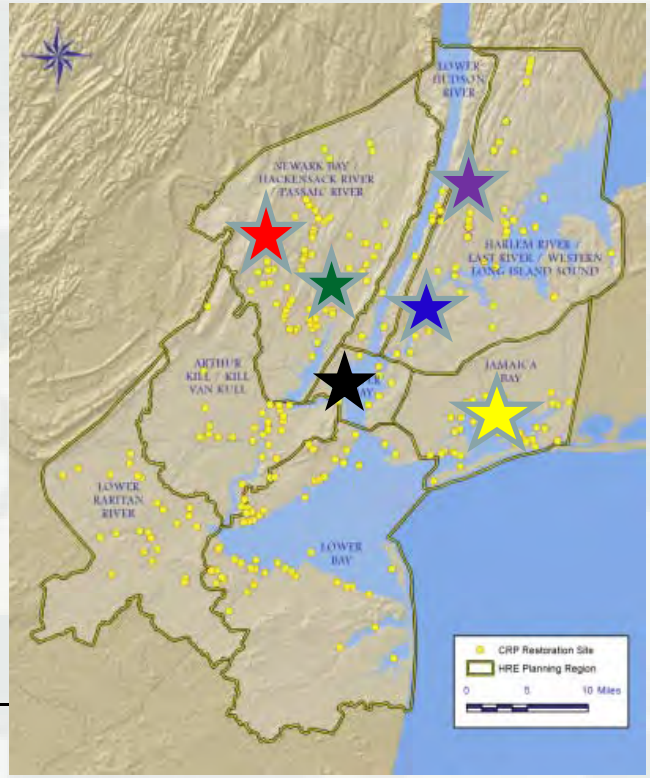
Bronx River: 9 Sites

Hackensack River: 2 Sites

Flushing Creek: 1 Site

Liberty State Park and Governors Island/Oysters

Jamaica Bay: 6 Perimeter Sites + Marsh Islands (1)



Future Budget Request

HRE-Oakwood Beach/Great Kills (Staten Island, N.Y.) Restoration

- First "Spin-Off Feasibility Study" for HRE
  - ✓"New Start" without approved Report. Future spin-offs would be "New Phase"
- Complements South Shore Staten Island Coastal Storm Risk Management Project
- Serves as Natural/Nature Based Features
- NYSDEC, NYCDEP and NYCDP&R interested local sponsors
- Leveraging of other Federal, State, Local Programs

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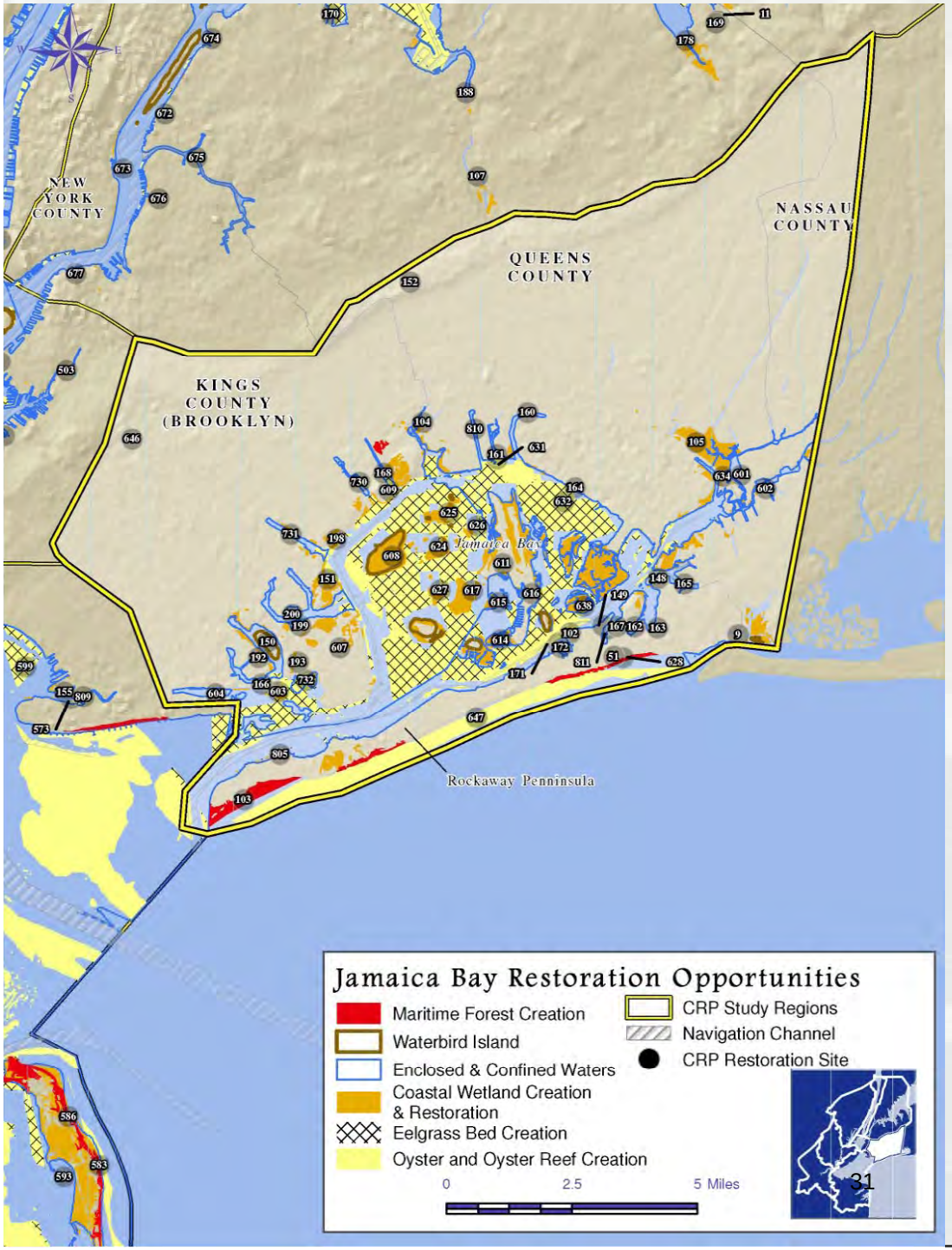

Jamaica Bay, N.Y. Planning Region

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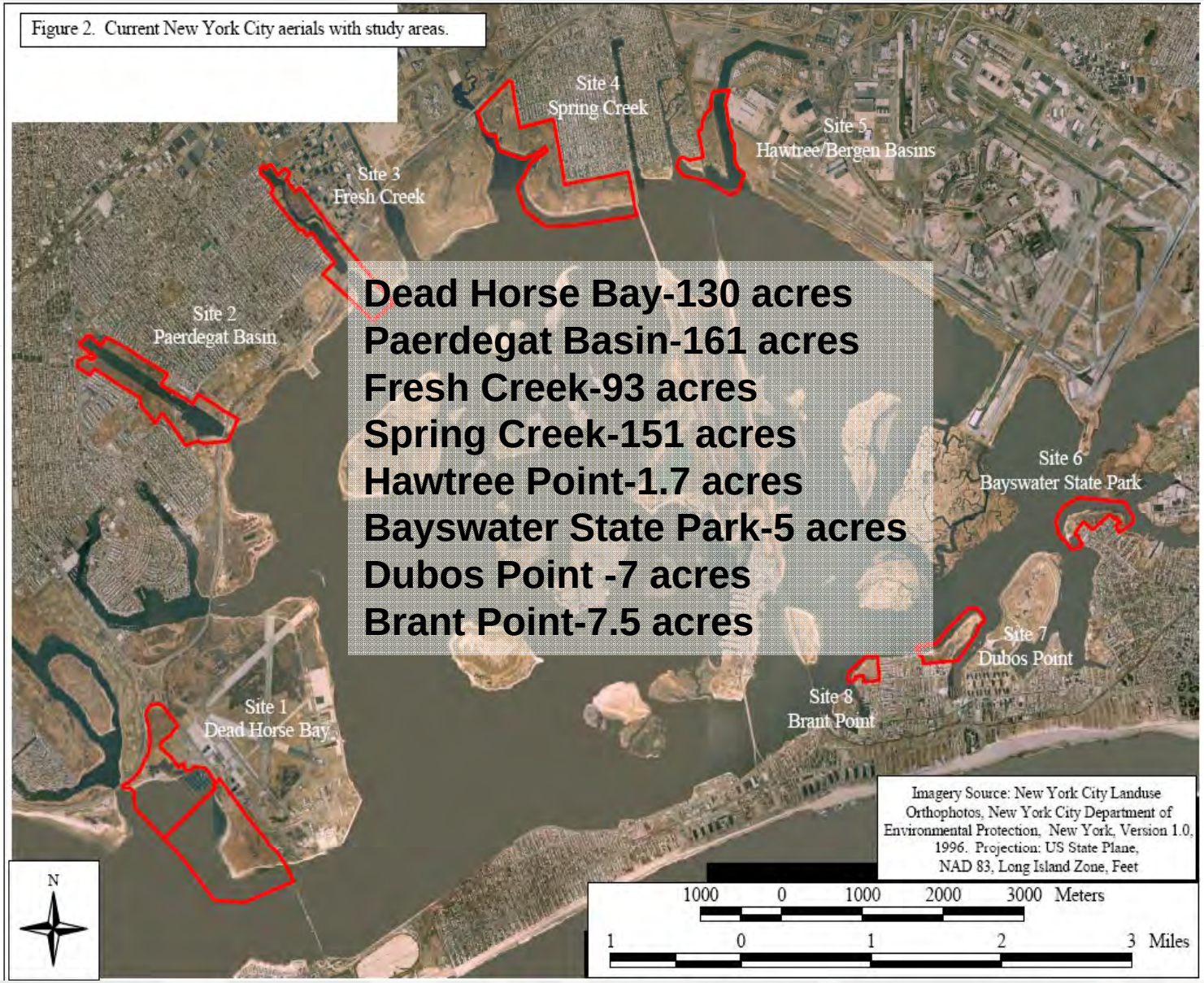
CRP Restoration Opportunities in Jamaica Bay, N.Y.

9. Seagirt Avenue Wetlands
51. Arvene Urban Renewal Area
102. **Brant Point**
103. Breezy Point
104. **Spring Creek**
105. Idlewild Park/ Brookville Marsh
148. **Bayswater Park**
149. **Dubos Point**
151. Bergen Beach
160. Bergen Basin
161. **Hawtree Point**
162. Conch Basin
165. Mott Basin
166. Shellbank Creek
810. Shellbank Basin
167. Somerville Basin
168. Hendrix Creek
172. Vernam Barbadoes
193. Gerritsen Inlet Dead Horse Bay
198. Canarsie Beach
200. Mill Basin
601. Hook Creek
602. Doxey Creek
603. Plumb Beach
604. Sheepshead Bay
607. Floyd Bennett Field
608. Canarsie Pol
611. West Pond
615. **Black Wall Marsh** **
616. Goose Pond Marsh
624. **Duck Point Marsh**
626. **Pumpkin Patch Marsh**
627. Stony Creek Marsh
628. Rockaway Peninsula
631. Frank Charles Park
632. Grassy Bay
634. Thurston Basin
638. Silver Hole Marsh
647. Rockaway Reef
730. **Fresh Creek**
731. **Paerdegat Basin****
732. **Dead Horse Bay Marsh Islands**

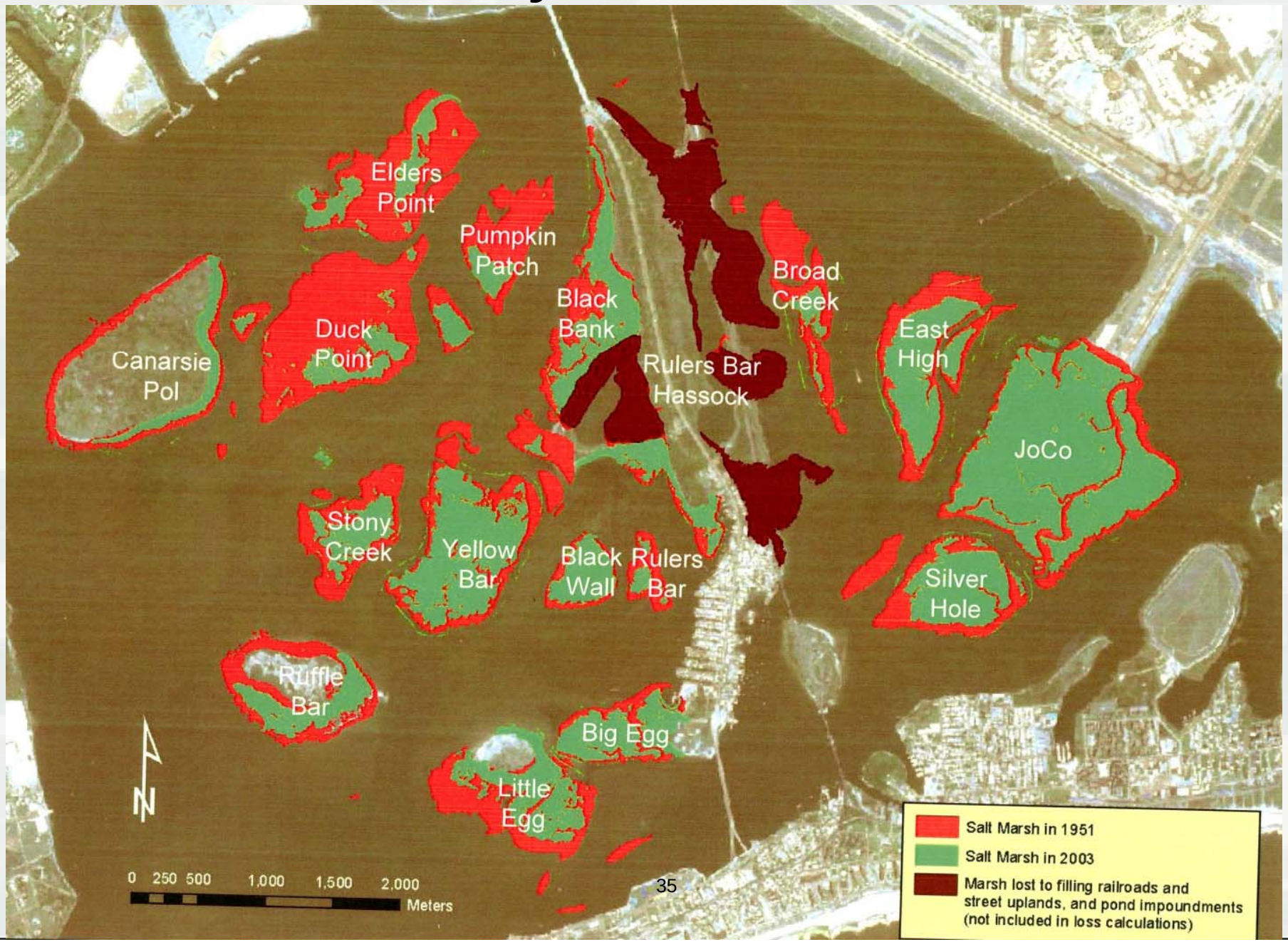
**** Constructed**
Bolded Sites: Near-Term Construction

Jamaica Bay, Marine Park, Plumb Beach Feasibility Study Areas (included in Rockaway Reformulation or HRE)



Jamaica Bay Planning Region Efforts

Jamaica Bay N.Y. Marsh Islands

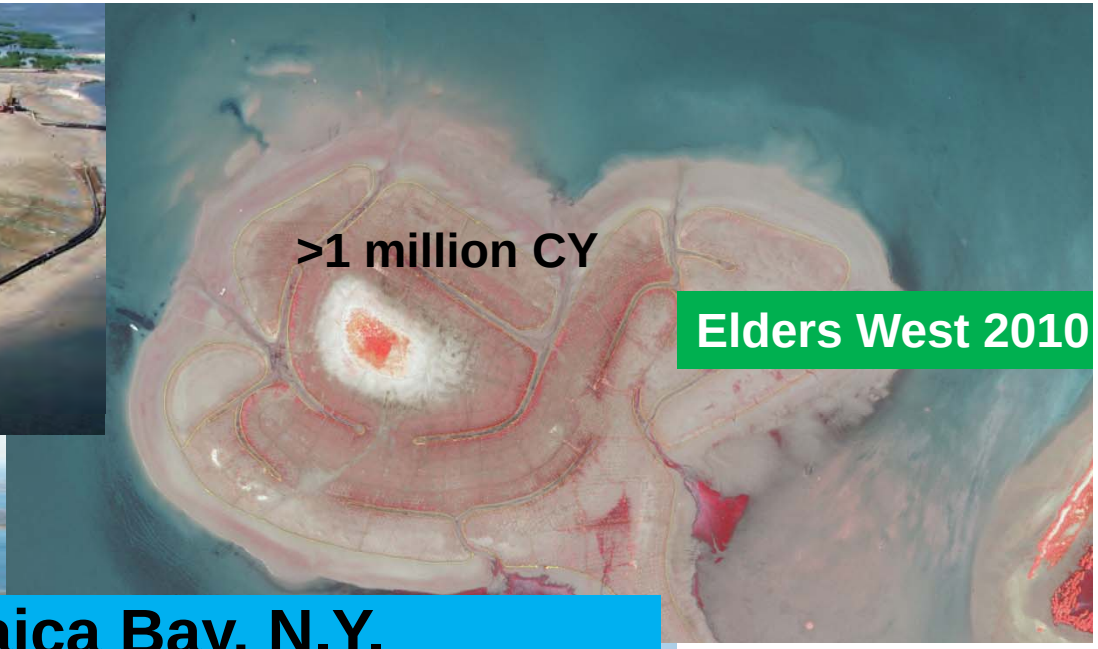


Jamaica Bay, N.Y.
Marsh Islands Restoration

Elders East 2006

>1 million CY

Elders West 2010

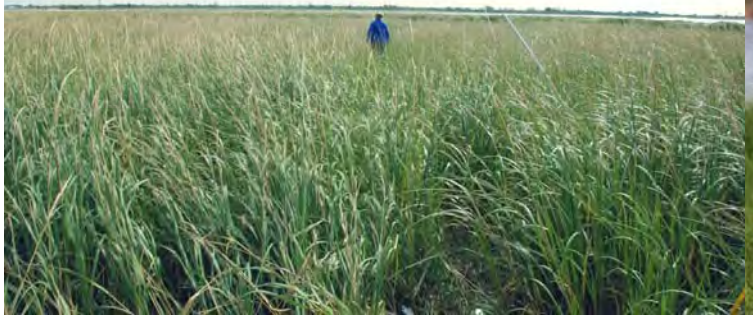


2007

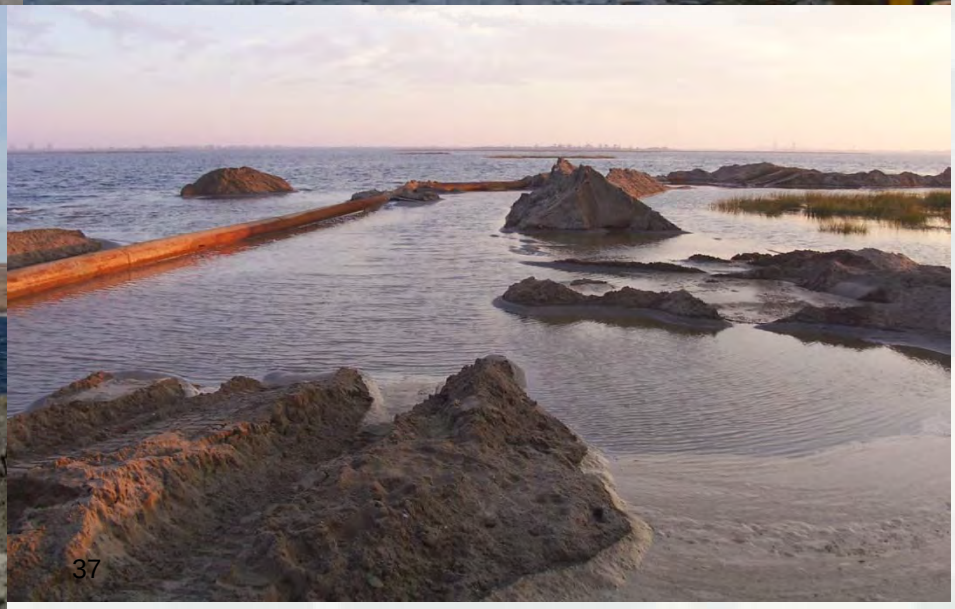
40 acres, ~$12M

Elders East 2011

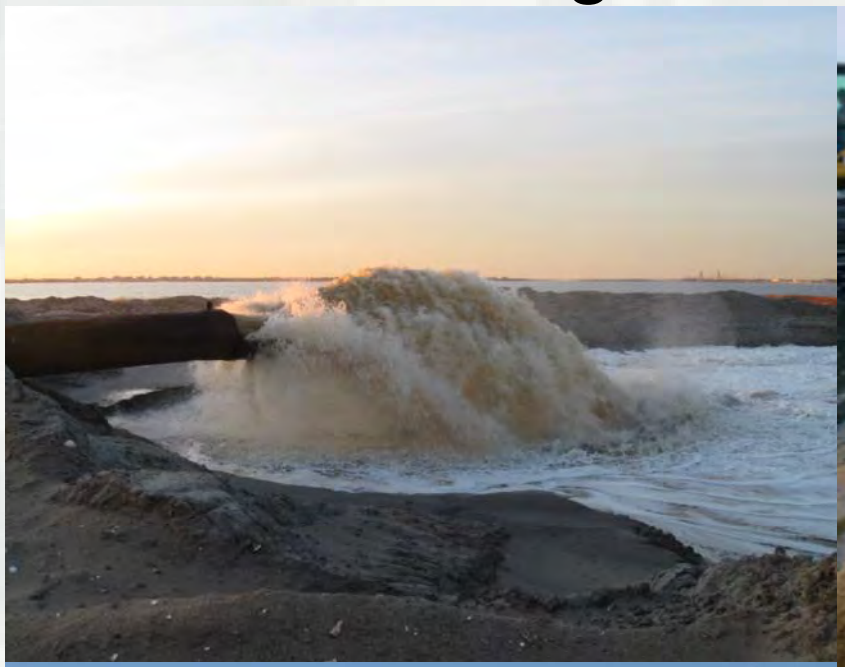
43 acres, ~$17M



Building the Island – Sand Delivery

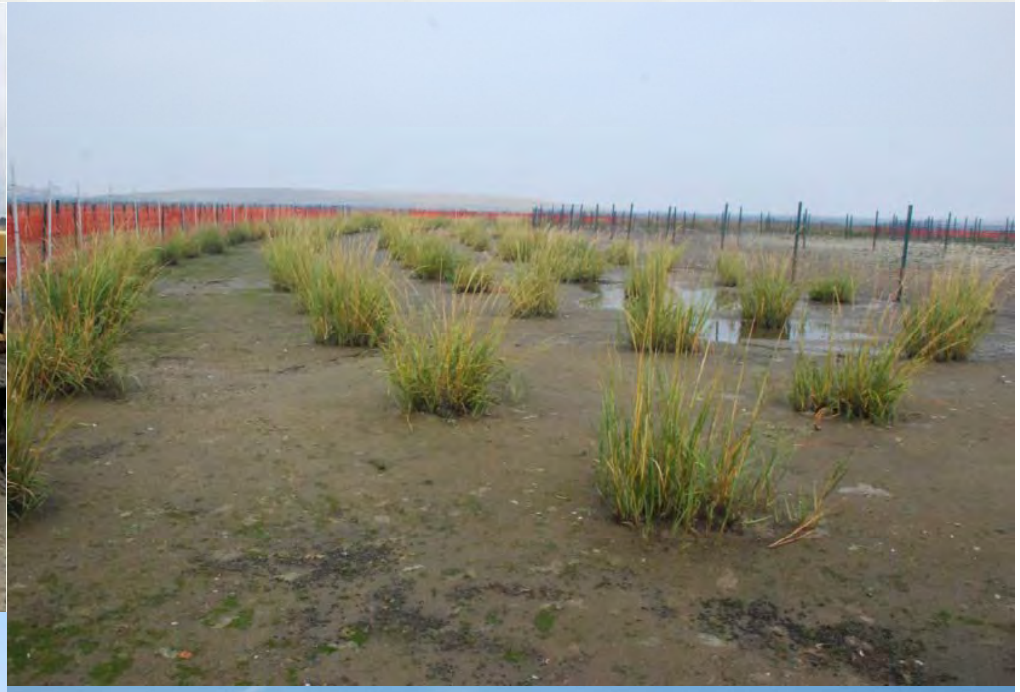


Building the Island – Containment



Building the Island - Grading

Vegetating the Island – Transplanting

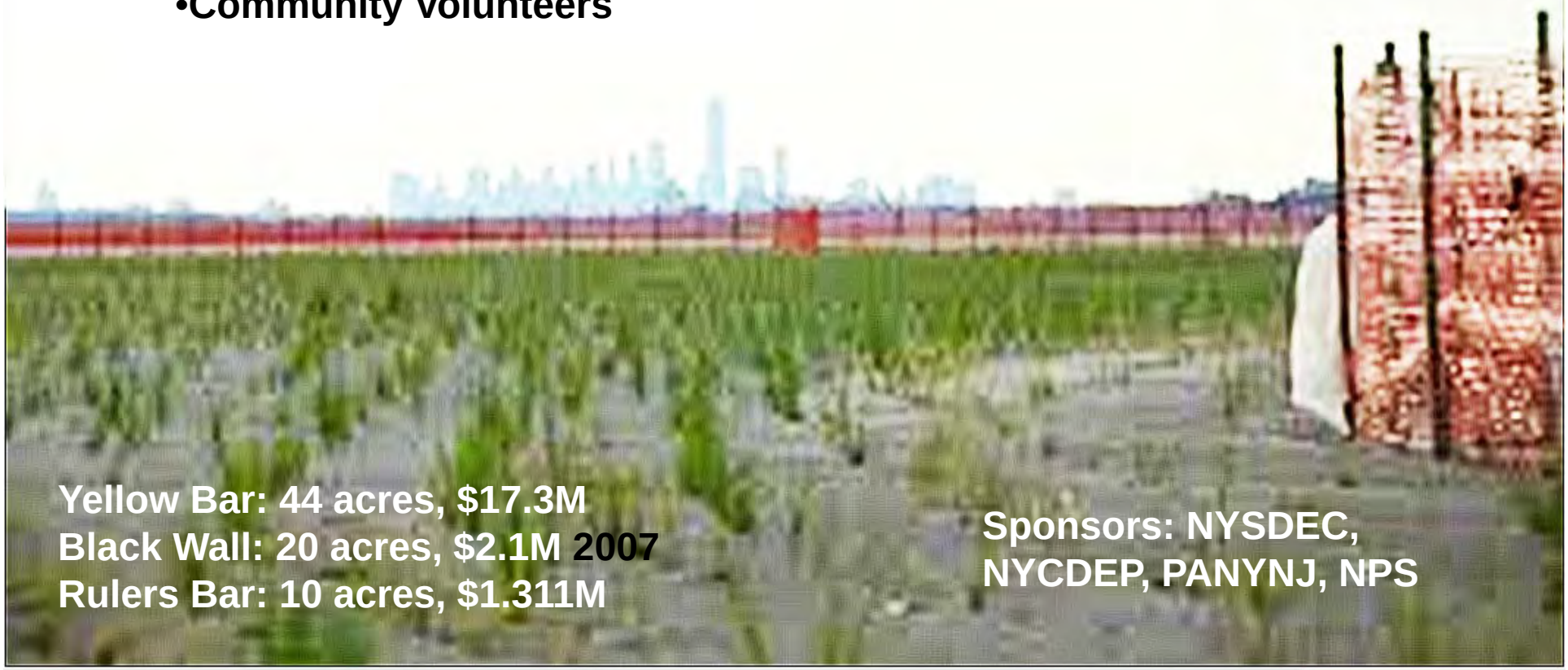


Yellow Bar, Black Wall and Rulers Bar
Marsh Islands Restoration 2012

Black Wall and Rulers Bar
Pre-Restoration

Planting Effort at Black Wall and Rulers Bar (July 2013):

- **Jamaica Bay EcoWatchers**
- **American Littoral Society**
- **Jamaica Bay Guardian and**
- **Community Volunteers**

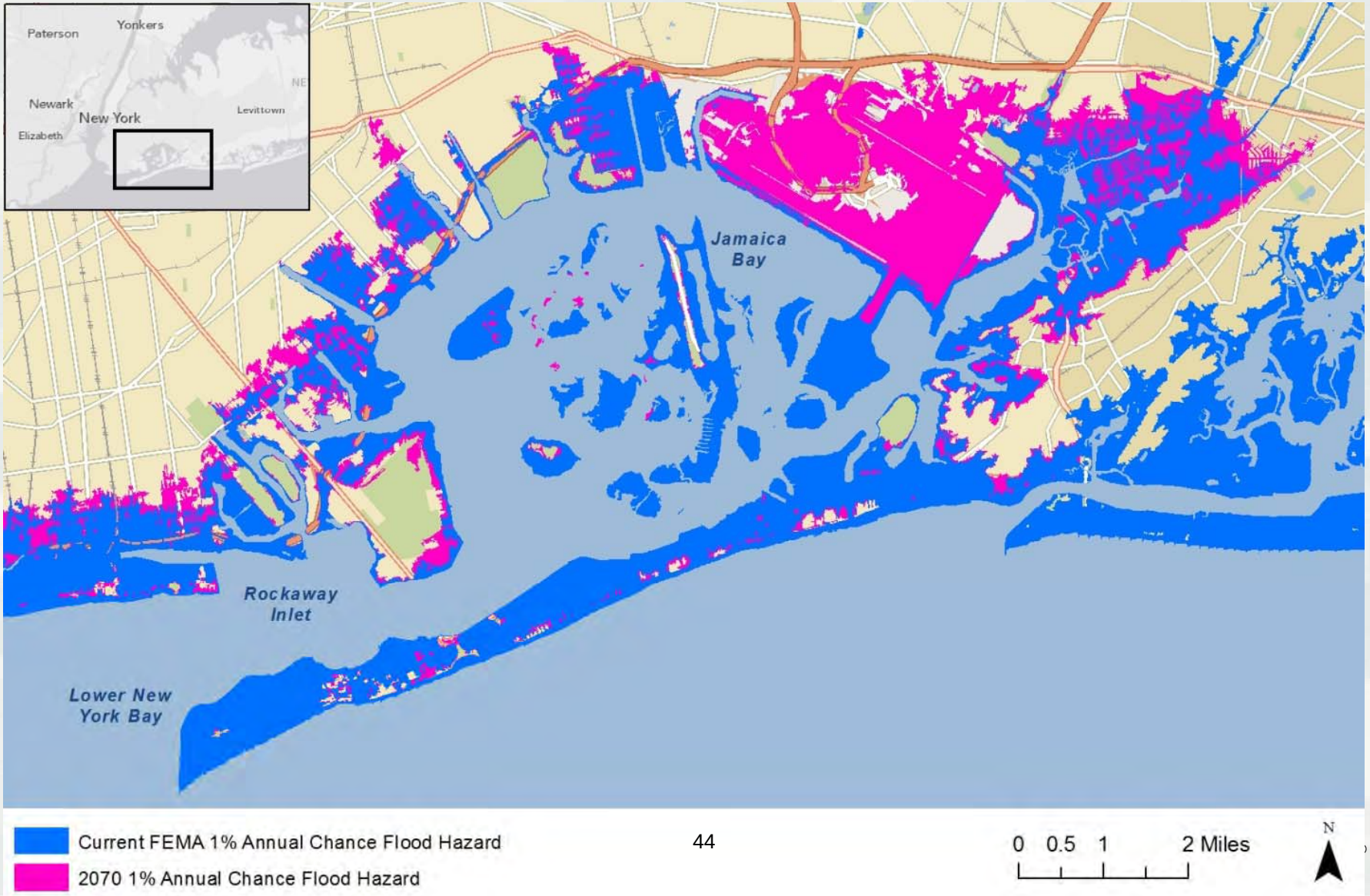


Yellow Bar: 44 acres, $17.3M
Black Wall: 20 acres, $2.1M 2007
Rulers Bar: 10 acres, $1.311M

Sponsors: NYSDEC, NYCDEP, PANYNJ, NPS

Sandy: Call to Action in Jamaica Bay

Blue illustrates current 1% annual chance of flooding
Purple illustrates 1.3 feet of Relative Sea Level Change in 2070, (mid-range SLC) added to the 1% flooding



Rockaway, N.Y. Reformulation

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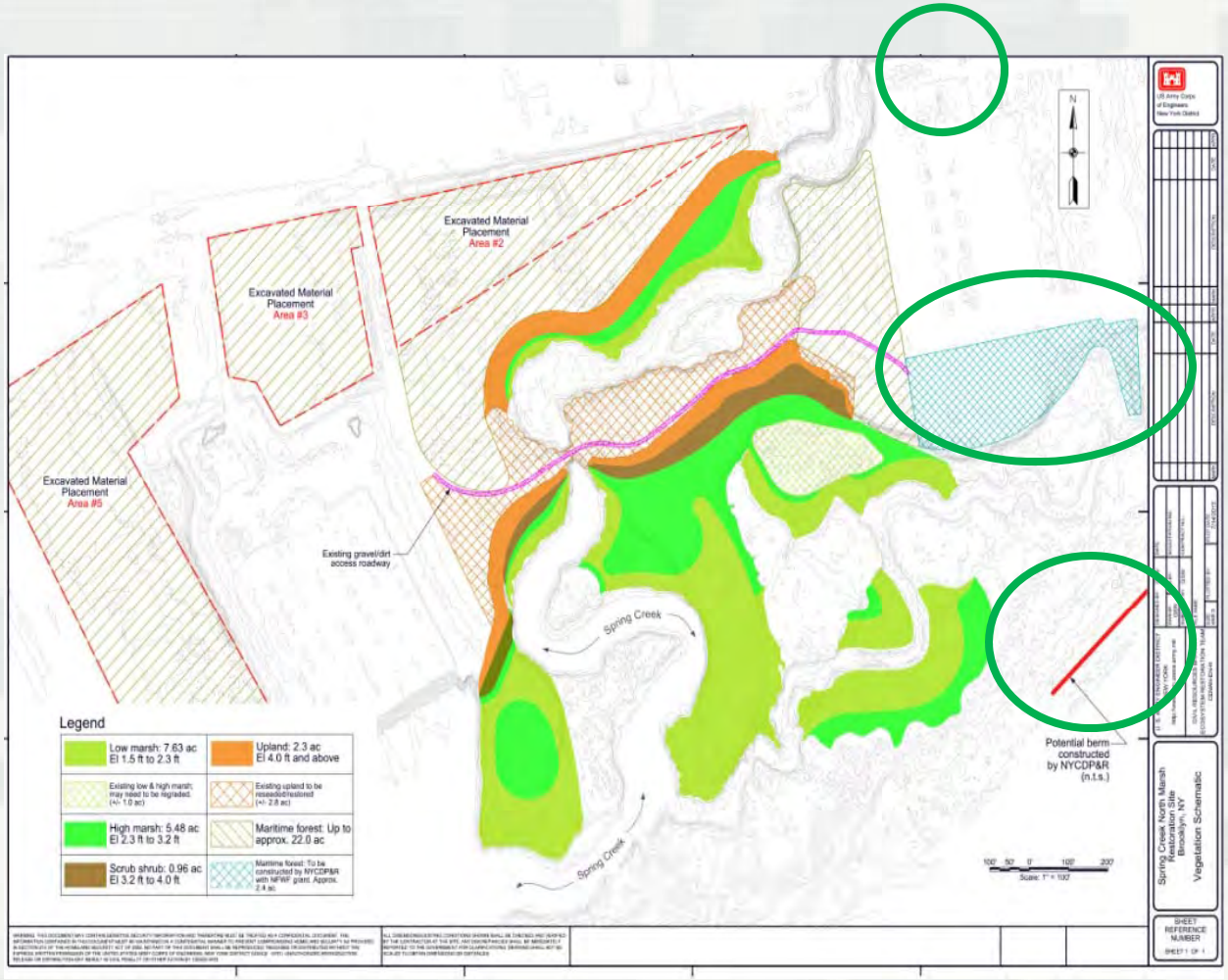
Spring Creek North (Continuing Authorities Program) and South (NYSDEC/FEMA Hazard Mitigation Grant)

Courtesy of NYCDP&R

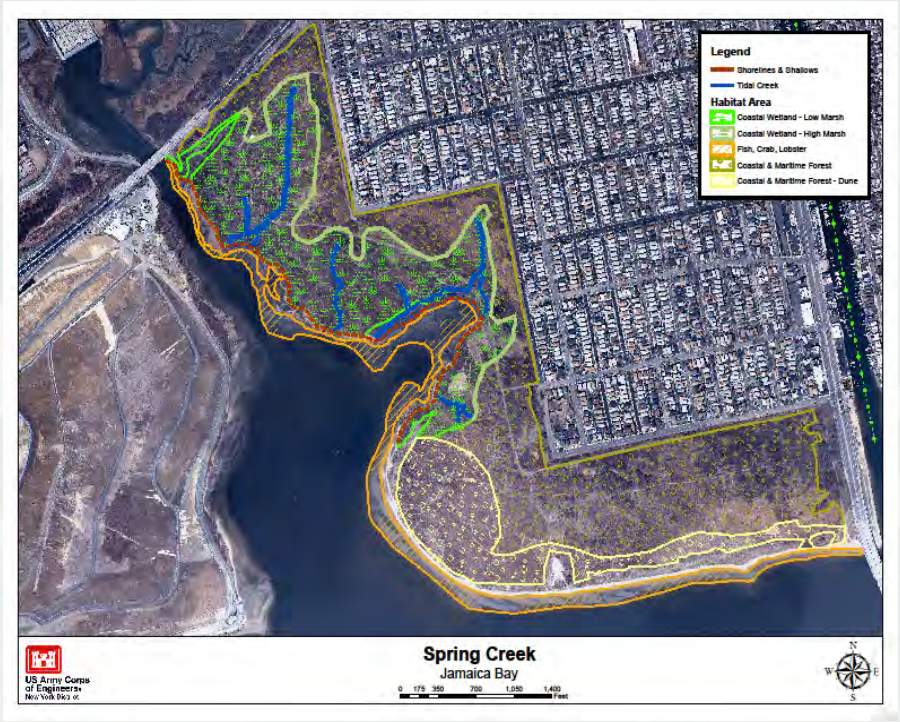
Spring Creek North Ecosystem Restoration (CAP)

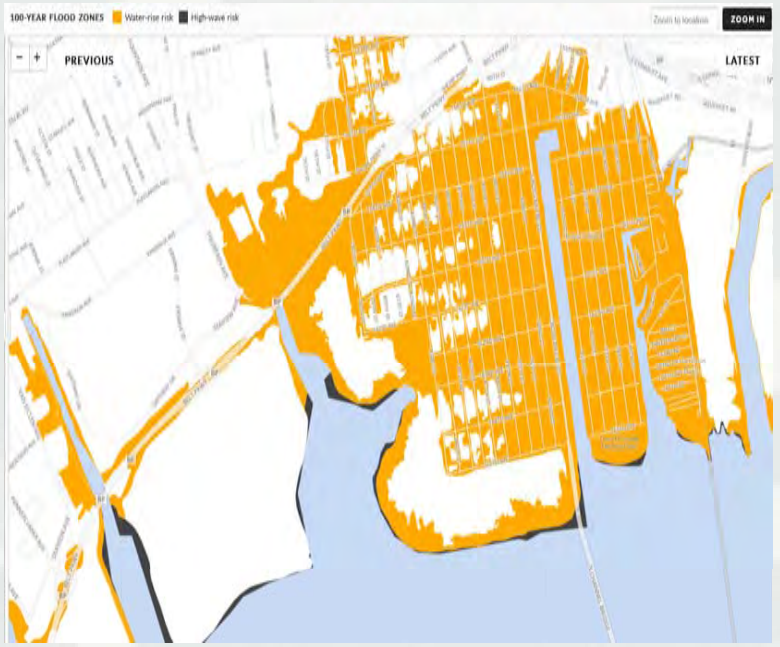


- **Local Sponsor: NYC Parks & Recreation**
- **Draft Feasibility Report: 12/15**
- **Approval by NAD: 2/16**
- **Project Partnership Agreement (PPA) with NYCDP&R: 3/16**
- **Preconstruction Engineering Design (PED)- Coordination NFWF Grant ($4.27M) & NY Rising ($250,000) Resiliency Measures and early construction of maritime forest by Parks (2017)**
- **Construction:2017-2018**

Spring Creek South
FEMA Hazard Mitigation Grant

- Awarded to NYSDEC with goal to reduce future disaster damages
- Integrated Approach: Ecosystem and Coastal Storm Risk Management (CSRM) benefits





- $50.8 (2 Phases)
- NYSDEC hired USACE through Interagency & International Services (IIS) Program to manage/prepare designs
- Design based on Ecosystem Restoration from USACE Feasibility Study

Integrated Approach
Coastal Storm Risk Management and Ecosystem Services

- Engineering Design Contract Awarded September 2015
- Baseline Conditions Sampling end of Sept/early Oct 2015.
- Potential Components of solution/design:
  - Restore 150+ acres of habitat
  - Create higher inland contours
  - Optimize target elevation (based on new flood maps)
  - Create low & high marsh, tidal creeks, berm, maritime forest and grasslands
  - Replace invasive plants with native species
  - Maintain and enhance public access to park (NPS Greenway)
  - Coordinate with other resiliency initiatives (Structures of Coastal Resiliency, NY Rising, etc)

Jamaica Bay N.Y. Coastal Restoration Coordination

Other Resiliency Proposals

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Coordination of Ongoing Efforts by Others

- **<u>Jamaica Bay Science and Resilience Institute</u>**
- NYC Special Initiative for Rebuilding and Resiliency (SIRR) Plan
- Urban Waterfront Adaptive Strategies

- NYS2100 Commission Report
- ERDC Studies
- Hurricane Sandy Rebuilding Task Force
- Rockefeller Foundation-Structures of Coastal Resilience…..

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